

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: John Jianhua Chen et al.  
Application No.: unassigned  
Date Filed: Filed herewith  
Title: MEDICAL DEVICES HAVING MULTIPLE LAYERS  
Group Art Unit: unassigned  
Examiner.: unassigned  
Atty. Docket: 04-0048

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INFORMATION DISCLOSURE STATEMENT (IDS)

Mail Stop Patent Application  
Commissioner For Patents  
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SIR:

In accordance with 37 C.F.R. §1.56 and in compliance with 37 C.F.R. §§1.97 and 1.98, the references listed on attached Form PTO/SB/08 and/or subsequently identified herein, are being submitted herewith for consideration by the United States Patent and Trademark Office.

I. COPIES

- a. ☒ A legible copy of (i) each foreign patent; (ii) each publication or that portion which caused it to be listed; and (iii) all other information or that portion which caused it to be listed, is included herewith.
- b. ☐ Any patents, publications or other information which are listed on PTO/SB/08 which are not enclosed herewith were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. §120:

U.S. Serial Number

U.S. Filing Date

II. CONCISE EXPLANATION OF THE RELEVANCE (check at least one box)

- a. ☒ Except as may be indicated below in (b) of this section, all of the patents, publications or other information are in the English language (concise explanation not required).
- b. ☐ A concise explanation of the relevance of all patents, publications or other information listed that is not in the English language is as follows:
- c. ☐ The following additional information is provided for the Examiner's consideration:

III. ☐ CROSS REFERENCE TO RELATED APPLICATION(S)

The Examiner is advised that the following co-pending application(s) contain(s) subject matter that may be related to the present application. By bringing this (these) applications to the Examiner's attention, Applicant(s) does(do) not waive the confidentiality provisions of 35 U.S.C. §122.

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**FEES**

- IV. ☒ THIS IDS IS BEING FILED UNDER 37 C.F.R. §1.97(b): (check one box)
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  - ☐ Two Copies of this paper are attached for Deposit Account charges and debits.

It is Applicant(s)' opinion that the claims presently on file patently distinguish the present invention from each of these references. The above references are being cited only in the interests of candor and without any admission that they constitute statutory prior art or contain matter which anticipates the invention or which would render the same obvious, either singly or in a combination, to a person of ordinary skill in the art.

If the Examiner has any questions concerning this IDS, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule (with a petition if necessary) and charge the appropriate fee to Deposit Account No. 50-1047.

Respectfully submitted,



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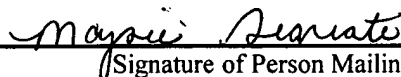
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		Application Number	unassigned
		Filing Date	Filed Herewith
		First Named Inventor	John Jianhua Chen
		Group Art Unit	unassigned
		Examiner Name	unassigned
Sheet 1 of 3	Attorney Docket Number	04-0048	

Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Class/Subclass		
	1	6,406,457 B1	604/96.01	Wang et al.	06-18-2002
	2	2001/0046564 A1	427/430.1	Kotov	11-29-2001
	3	2002/0037383 A1	428/36.91	Spillman	03-28-2002
	4	2002/0061326 A1	424/424	Li et al.	05-23-2002
	5	2003/0065355 A1	606/200	Weber	04-03-2003
	6	2003/0093107 A1	606/194	Parsonage et al.	05-15-2003
	7	2003/0157260 A1	427/402	Rubner et al.	08-21-2003
	8	2003/0175517 A1	428/402.2	Voigt et al.	09-18-2003
	9	2003/0219909 A1	436/518	Lally et al.	11-27-2003
	10	2004/0023317 A1	435/14	Motamedi et al.	02-05-2004

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM- DD-YYYY	T
		Office <sup>3</sup>	Number <sup>4</sup>	Class/Subclass			
	1	WO	99/47252	B01J 13/00	Lerche Karl Heinz (DE) et al.	09-23-1999	
	2	WO	03/103854 A1	B05D 1/18, B01D 3/00	Nicholas A. Kotov (US) et al.	06-06-2003	
	3	WO	00/44507	B05D 1/14, 3/00, G11B 5/62	Nicholas A. Kotov (US) et al.	08-03-2000	

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				First Named Inventor	John Jianhua Chen
				Group Art Unit	unassigned
				Examiner Name	unassigned
Sheet	2	of	3	Attorney Docket Number	04-0048

OTHER PRIOR ART—NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials <sup>1</sup>	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	A1	CHUNG, A.J. AND RUBNER, M.F., Methods of Loading and Releasing Low Molecular Weight Cationic Molecules in Weak Polyelectrolyte Multilayer Films, <i>Langmuir</i> 2002, 18, 1176-1183.	
	A2	FRANK CARUSO et al., Microencapsulation of Uncharged Low Molecular Weight Organic Materials by Polyelectrolyte Multilayer Self-assembly, <i>Langmuir</i> 2000, 16, 8932-8936	
	A3	GI-RA, YI et al., Ordered Macroporous Particles by Colloidal Templating, <i>Chem. Mater.</i> 2001, 13, 2613-2618	
	A4	SHCHUKIN, D.G. et al., Micron-Scale Hollow Polyelectrolyte Capsules with Nanosized Magnetic Fe <sub>3</sub> O <sub>4</sub> Inside, <i>Materials Letters</i> 57, 1743-1747, 2003.	
	A5	RADTCHENKO, I.L. et al., A Novel Method for Encapsulation of Poorly Water-soluble Drugs: Precipitation in Polyelectrolyte Multilayer Shells, <i>International Journal of Pharmaceutics</i> , 242, 219-223 (2002).	
	A6	RADTCHENKO, I.L. et al., Assembly of Alternated Multivalent Ion/Polyelectrolyte Layers on Colloidal Particles. Stability of the Multilayers and Encapsulation of Macromolecules into Polyelectrolyte Capsules, <i>Journal of Colloid and Interface Science</i> , 230, 272-280 (2000)	
	A7	WHAU, WINKY L. et al., Surface-chemistry technology for microfluidics, <i>J. Micromech. Microeng.</i> 13 (2003) 272-278	
	A8	RADTCHENKO et al., Incorporation of macromolecules into polyelectrolyte micro and nanocapsules via surface controlled precipitation on colloidal particles, <i>Colloids and Surfaces A: Physicochemical and Engineering Aspects</i> 202 (2002) 127-133.	
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		Group Art Unit	unassigned		
		Examiner Name	unassigned		
Sheet	3	of	3	Attorney Docket Number	04-0048

A11	QIU, XINGPING et al., Studies on the Drug Release Properties of Polysaccharide Multilayers Encapsulated Ibuprofen Microparticles, <i>Langmuir</i> 2001, 17, 5375-5380
A12	ANTIPOV, ALEXEI A. et al., Sustained Release Properties of Polyelectrolyte Multilayer Capsules, <i>J. Phys. Chem. B</i> 2001, 105, 2281-2284, October 27, 2000
A13	<a href="http://www.bmed.mcgill.ca/tabrizian/People_pages/Benjamin2.htm#cCOMMUNICATIONS">http://www.bmed.mcgill.ca/tabrizian/People_pages/Benjamin2.htm#cCOMMUNICATIONS</a> , THIERRY, BENJAMIN, Development of new strategies for endovascular revascularization procedures, 1-7, date unknown but before the filing of this application
A14	<a href="https://engineering.purdue.edu/BME/Seminars/2003/july_14.html">https://engineering.purdue.edu/BME/Seminars/2003/july_14.html</a> , Graduate Seminar, Stent coating for drug delivery: Coating polymeric micelles using polyelectrolytes Purdue University Biomedical Engineering Seminar, 2003, 1-2, July 14, 2003
A15	<a href="http://www2.latech.edu/~ylvov/research/research.htm">http://www2.latech.edu/~ylvov/research/research.htm</a> , LVOV, YURI M., Nanofabrication of ordered multilayers by alternate absorption of polyions, nanoparticles and proteins: From planar films to microtemplates, Institute for Micromanufacturing, LaTech, Ruston, LA 71272, pp. 1-13, date unknown but before the filing of this application.
A16	POMMERSHEIM, RAINER; SCHREZENMEIR, JURGEN; VOGT, WALTER. "Immobilization of enzymes by multilayer microcapsules" <i>Macromol. Chem. Phys.</i> Vol. 195. 1994. pp 1557-1567.
A17	RILLING, P.; POMMERSHEIM, WALTER R.; VOGT, W. "Encapsulation of cytochrome C by multilayer microcapsules. A model for improved enzyme immobilization". <i>Journal of Membrane Science</i> Vol. 129. 1997. pp. 283-287.
A18	SUKHORUKOV, GLEB B.; SHCHUKIN, DMITRY G.; DONG, WEN-FEI; MOHWALD, HELMUT; LULEVICH, VALENTIN V.; VINOGRADOVA, OLGA I. "Comparative Analysis of Hollow and Filled Polyelectrolyte Microcapsules Templated on Melamine Formaldehyde and Carbonate Cores". <i>Macromol. Chem. Phys.</i> 2004. Vol. 205. pp. 530-535
A19	SASTRY, MURALI; KUMAR, ASHAVANI; DATAR, SUVARNA; DHARMADHIKARI, C.V.; GANESH, KRISHNA N. "DNA-mediated electrostatic assembly of gold nanoparticles into linear arrays by a simple drop-coating procedure". <i>Applied Physics Letters</i> . Vol. 78, No. 19. May 7, 2001. pp. 2943-2945.
A20	MAMEDOV, ARIF A.; KOTOV, NICHOLAS A.; PRATO, MAURIZIO; GULDI, DIRK M.; WICKSTED, JAMES P; HIRSCH, ANDREAS. "Molecular design of strong single-wall carbon nanotube/polyelectrolyte multilayer composites". <i>Nature Publishing Group</i> . November 2002. Vol. 1. pp. 190-194.

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